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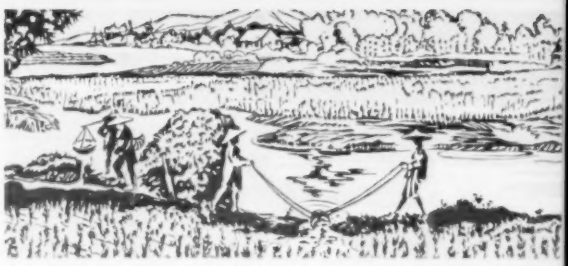

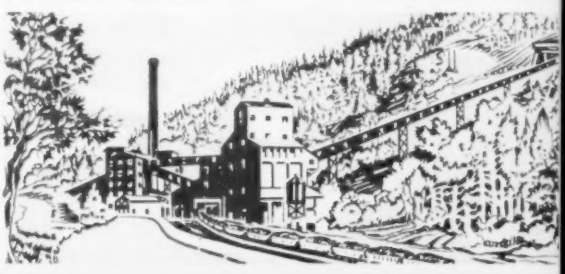

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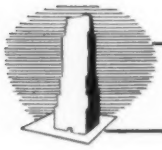

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VOLUME LVI NOVEMBER 1957 NUMBER 8

# THE TOWNSCAPE OF NASHVILLE, TENNESSEE ON THE EVE OF THE CIVIL WAR

PHILLIP BACON
Teachers College, Columbia University

A study of the home community is a typical unit in many elementary and secondary school social studies curriculums. All too frequently, however, such units deal almost exclusively with the historical development of the town. If attention is given to the community's townscape, or special patterns of the home place, it is often in terms of the contemporary scene. It is the contention of the writer that boys and girls can better understand the present townscape of their community, by examining it in light of the past townscapes out of which the present developed.

An opportunity to reconstruct thru maps, pictures, and text the succession of townscapes of the local community can be a stimulating and rewarding class project. It can be carried out by committees and lends itself ideally to the typical social studies program. It affords a fine opportunity to see the contribution that geography can bring to an understanding of local history. Indeed, without this geographical approach, all too easily does a unit on the local community degenerate into a recital of events and personalities and an understanding of the townscape is lost.

Sources of data for such a study are usually available in the community. Maps of times past can be secured from the courthouse or planning commission. The school and community libraries may have copies of diaries and letters of early settlers. The library may also contain the published accounts of travelers who passed thru or stopped in the community. Such sources are invaluable for their descriptions of early townscapes. In addition, old newspapers and business directories furnish numerous clues to a community's past geographies. Not infrequently in the more recently settled portions of the United States and Canada, early settlers are still living. An opportunity to discuss scenes of the old days with the

young citizens of today generally is met with enthusiasm.

The following is an account of an early townscape of one American community—the Nashville, Tennessee of one hundred years ago. It is an example of one way in which a class might utilize locally available materials to understand better their own home community.

## Selecting the Nashville Site

In 1784, four years after the first permanent white settlers arrived in the Central Basin of Tennessee, the town of Nashville was officially established by act of the General Assembly of North Carolina.[1] The site selected for the new community was a high area lying along the southwest bluff of the Cumberland River. Among the natural advantages to be noted in this location were: (1) a high bluff which offered protection from Indian attack; (2) the presence of a large saline spring, the celebrated French Lick, which served as a source of salt, a commodity always in short supply on the frontier; (3) a navigable river connecting with the valleys of the Ohio and Mississippi; and (4) a freely flowing fresh water spring of sufficient volume to serve the needs of a small frontier community (Fig. 1).

It is possible, too, that the pioneers were influenced in their choice by the fact that the site had been occupied at earlier times, as evidenced by the presence of the artifacts and stone graves of Mound Builders[2] and the ruins of a Shawnee fort.[3] It seems likely that the physical features—the bluff, salt lick, river, and fresh water supply—were of primary importance in the choice of site, but it was doubtless comforting to the frontiersmen that their selection was confirmed by others who preceded them.

The Act of 1784 required that a 200 acre plat be surveyed, lay-

[1] Walter Clark, ed., *State Records of North Carolina* (30 vols., Goldsboro, N.C., 1906), XXIV, p. 616. Until 1796, when Tennessee became a state, the land on which Nashville was established was part of North Carolina.

[2] Available archeological evidence seems to indicate that the Mound Builders arrived in the Central Basin of Tennessee about the year 1000 A.D. They probably abandoned their village on the Nashville site sometime late in the fifteenth century. Whither they went and why they departed remain matters for speculation. Possibly they were driven from their homes by the ancestors of the Iroquois, who voiced claim by right of conquest to the lands of the Central Basin down to the time of the Treaty of Fort Stanwix in 1768.

[3] The Shawnees moved from the Savannah River of Georgia to the Nashville site in the mid-seventeenth century. Pressed by almost continual incursions, they began leaving the area as early as 1681, migrating north to what is now Illinois and Indiana. In 1714 the site was completely abandoned.

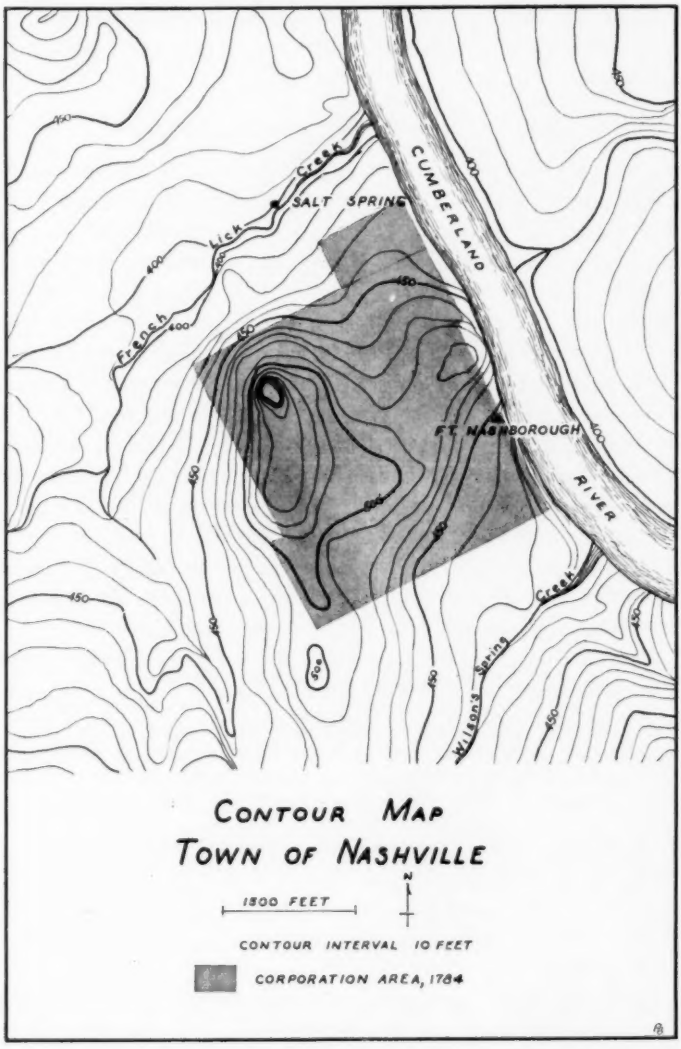


FIG. 1

ing it off into one-acre lots. This act also specified that the surveyor lay off appropriate streets. Rather than aligning the streets in a north-south, east-west fashion, the surveyor's map[4] shows that he

[4] Thomas Molloy, "Plan of Nashville," (Photostatic copy of map on file at Tennessee State Library and Archives, Nashville, 1789).

orientated his streets with respect to the river. Thus Nashville's original settlement outline and street pattern were both riverine in character.

### Extension of the Original Pattern

Before the coming of the railroad to Middle Tennessee, Nashville was essentially a river town. As such, the Cumberland remained much in evidence in Nashville's townscape during the nearly four score years that followed its creation to the time of the Civil War. As the town grew beyond its original 200 acre tract, its corporate limits were extended up and down the Cumberland (Fig. 2). Their very restricted expansion beyond the original western boundary gave additional emphasis to ante-bellum Nashville's riverine character. Streets, too, as they were extended with the growth of the town, continued to reflect this riverine pattern.

Graveled walks and streets were apparently the rule during the years before the Civil War, altho the sidewalks along the principal streets were marked off by curbstones and those around the Public Square were paved with brick. One visitor to Nashville reported, "Some of the streets are steep, and encumbered with sharp pieces of limestone, that punish the feet severely in walking."[5]

Shortly before the War, another visitor to Nashville noted the condition of Nashville's streets. She wrote:

> The streets are finely graded, and the walks handsomely flagged in the vicinity of the private residences; but in some of the principal business streets it is the reverse, for which, by the way, there is no excuse, with a superfluous abundance of material within half a mile of the city.[6]

Visitors were not alone in criticizing the condition of the streets. In 1856 a local newspaper editorial stated, "The condition of our streets, alleys and sidewalks is such as to make it incumbent upon those who occupy executive and legislative positions to set about improving them."[7]

Steamboats were navigating the Cumberland before Nashville had a bridge spanning the river. Ferries were the only means of linking the community on the bluff with its opposite bank until 1823 when a stone bridge was completed. This bridge served the

[5] G. W. Featherstonhaugh, *Excursion Through the Slave States, from Washington on the Potomac to the Frontier of Mexico; with Sketches of Popular Manners and Geological Notices* (2 vols., London, 1805), I, p. 193.

[6] Lillian Foster, *Way-Side Glimpses, North and South* (New York, 1860), p. 180.

[7] Nashville *Republican Banner*, November 18, 1856.

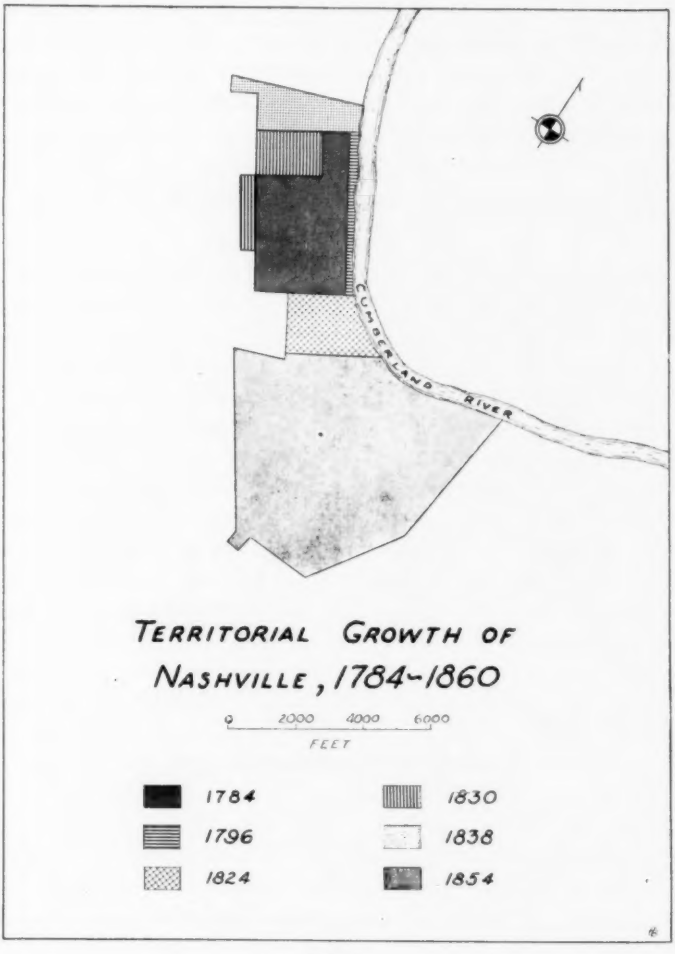


FIG. 2

city for three decades. As the larger steamboats of the 1850's began plying the Cumberland, however, the bridge was so low during periods of high water that it was regarded as a menace to navigation. Consequently, a suspension bridge was erected connecting the Public Square with the opposite bank of the river. This bridge was 110 feet above the low water mark. A second bridge, for railroad use, was completed in 1859 and was located one quarter mile downstream from the street bridge.

### River Front

The bluff on which Nashville began its development was some 70 to 110 feet above the Cumberland River. The southern limit of the original corporate area, near Broad Street, was considerably lower in elevation (Fig. 3). Thus, boats were restricted, in making

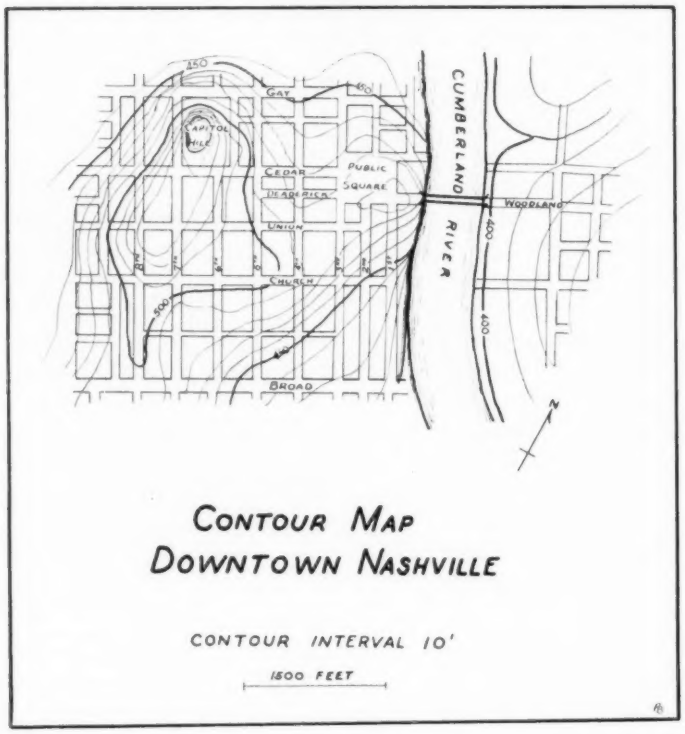


FIG. 3

landings in the vicinity of the town, to this lower land lying near the southern boundary. Eventually the land in the vicinity of lower Broad Street experienced much of its development as the district for wholesale dealers and commission merchants, whose produce was received and shipped by river.[8]

Typical of the river front district in many port cities, Nash-

[8] Based on an analysis of *Nashville Business Directory, 1855-56.*

ville's First Avenue,[9] which runs parallel to the Cumberland, developed an undesirable section known as "the Jungle." In the decade before the Civil War this section housed a number of saloons, brothels, and criminal hideouts. In addition to the ubiquitous wholesale houses and warehouses, the river front district contained the gas works and jail, as well as several wood and coal yards and a soap and candle factory.[10]

## COMMERCIAL DISTRICT

The act which created the town of Nashville stipulated that four acres be reserved for the erection of public buildings. This Public Square, which occupied the highest land available near the river, became the nucleus of the commercial district. By the time of the Civil War the Public Square was still the commercial center.

If Nashville had been located on level terrain with no barriers, it seems likely that the growth of the commercial district would have been radial, forming a compact arrangement. Both natural and cultural features of the townscape, however, offered conditions which interfered with what might be considered a normal trend of development. Expansion of the pre-Civil War commercial area was confined to the west side of the Cumberland, due principally to the interruption produced by the river and its valley. Land on the east side of the river is low and subject to overflow during stages of high water. In addition, the construction of a bridge required a long, high fill with an appreciable slope. River, flood conditions, slope, and fill combined to check expansion eastward.[11]

On the eve of the Civil War, the Public Square, the original retail section, was in the process of change to that of a wholesale district. Of 28 business establishments located on the Square in 1855, for example, 13 of them were engaged exclusively in wholesale trade. These wholesale houses dealt principally in dry goods, hardware, and drugs.[12]

Wholesale grocery merchants, as well as other wholesalers dealing in the bulkier items of commerce, were, in general, situated

[9] Present day street names are used throughout this paper.

[10] Based on an analysis of *Nashville Business Directory, 1855-56.*

[11] A. E. Parkins, "Profiles of the Retail Business Section of Nashville, Tennessee, and Their Interpretation," *Annals of the Association of American Geographers,* XX (June, 1930), 169-170.

[12] Based on an analysis of *Nashville Business Directory, 1855-56.* This trend was confirmed by conditions following the Civil War. In 1871, for example, 46 business houses were located on the Public Square; 30 of them were engaged exclusively in the wholesale business. Based on an analysis of *Nashville City Directory, 1871.*

on the low-lying land near the water front. In addition, many of the town's commission merchants had their places of business in locations convenient to the wharves.[13]

Shoppers seem to prefer to travel over level terrain. This preference is reflected in the growth of Nashville's retail shopping district. By the time of the Civil War, the retail district had expanded beyond the Square, which is relatively level, south along Third to Union, and thence west on Union to Fourth. It should be noted that as the retail shopping district continued to expand after the War, the better shops remained on these same streets on down to Fifth, thence south on Fifth to Church, and finally west on Church. All of this area seems to show an adjustment to surface features, inasmuch as it is possible to travel the entire route without experiencing a change in elevation greater than ten feet (Fig. 4).

### Manufacturing District

As late as 1860, Nashville had no single section that might be termed the manufacturing district. With but approximately 15 per cent of its labor force engaged in manufacturing in 1860, much of its industry was operated on a small scale. Many of the manufacturing establishments were located in part of the living quarters of the craftsmen. Thus, in the decade before the War, there was some manufacturing on all of the streets comprising the town's nucleus.[14]

### Capitol Site

Nashville being the capitol of the state of Tennessee, it seemed only fitting that a site be selected for a capitol building that would give it an imposing location. The highest point in close proximity to the center of the city was a hill, four blocks west of the Square, rising some eighty feet in elevation above the Square. Originally known as Cedar Knob, the hill was considered worthless by Nashville's early residents. Covered with cedars, growing in the thin layer of soil which overlay limestone rock, the hill was unfit for agriculture and its steep slopes made it unsuitable as a business location. However, with a commanding view of the city and surrounding countryside, it was highly desirable as a site to house the

[13] Based on an analysis of *Nashville Business Directory, 1855-56.*
[14] *Ibid.*

state's governmental headquarters. On June 16, 1844, William Strickland, an architect of Philadelphia, was requested to submit a plan for the new State House. The following year he was hired to supervise the erection of the building and on July 4, 1845, the cornerstone was laid.[15] The construction of the building, which was completed in the mid-1850's, evidently brought about a considerable interest in improving local architecture. Shortly before the Civil War, one Nashville newspaper commented:

> Within the last two or three years there has been erected a larger number and a better class of buildings, both public and private, than within a long series of years previous. The original impulse was, most certainly, given by the erection of our State capitol.[16]

## RESIDENTIAL DISTRICTS

Prior to the Civil War, Nashville had no local transportation system in operation. As a result, the majority of the homes of the town's citizens were located within walking distance of the commercial district. In addition, a large number of persons resided near the macadamized turnpikes that led into Nashville from the surrounding countryside.

Within the corporation area, the most fashionable residential section was in the vicinity of Capitol Hill. More modest homes were located both to the north and south of the commercial district. Some laborers, as well as a few river boat pilots, made their residence along the water front.[17]

A visitor in the decade before the Civil War, reflecting on Nashville's homes, wrote:

> This city has many handsome private residences tastefully furnished, some in sumptuous and magnificent style, and all surrounded by beautifully laid out grounds which give them a look of retirement and repose, and they are more like the splendid palaces of fashion, than the habitations of a republican city.[18]

Albeit this seeming opulence, Nashvillians were faced with an increasingly serious problem as their residential districts expanded. Altho low land lay both to the north and south of the first corporate limits, the 200 acre site selected for the town in 1784 was high and was comparatively safe from the hazard of floods. However, as the

[15] "Minutes of the Meetings of the Board of Commissioners to Superintend the Construction of the State House" (typewritten MS at Tennessee State Library and Archives, Nashville, n. d.), pages unnumbered.

[16] Nashville *Union and American*, September 16, 1856.

[17] Based on an analysis of *Nashville Business Directory, 1855-56*.

[18] Foster, *op. cit.*, p. 188.

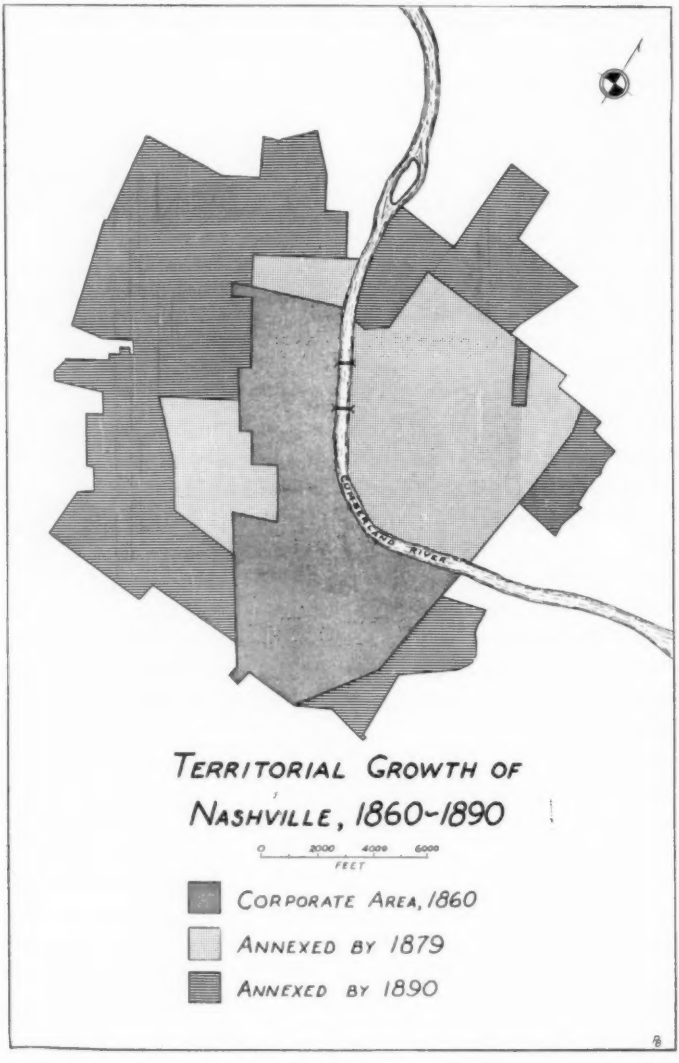


FIG. 4

commercial district expanded, it gradually encroached on land that had originally been utilized for residential purposes. Some citizens, in abandoning their homes to business and manufacturing sites, moved into the country. Others, however, took up new residence

south of Broad Street or in the vicinity of the old salt spring. Both of these areas lay along creek bottoms and were subject to periodic flooding. During the decade before the Civil War, buildings had crowded this bottom land to the point that local newspapers carried several editorials regarding the menace of floods to the frequently inundated residents.[19]

## CONCLUSION

Despite some problems of adjustment to site,[20] Nashville's townscape on the eve of the Civil War was that of a prosperous and flourishing river town. However, the coming of the War and Nashville's early occupation by Federal troops brought profound changes. By the spring of 1862, its fleet of steamboats, once the pride of Middle Tennessee, had been burned at the wharves; warehouses and churches were being converted to barracks and base hospitals; stores and homes were boarded up; and the bridges across the Cumberland had been destroyed by the retreating Confederate army.

The War altered portions of Nashville's townscape, as well as many of the ante-bellum traditions. Nevertheless, out of those tragic years developed a new townscape. With the rising spirit of industrialism in the new South came a distinct manufacturing district. By the close of the War the railroad was secure in its position as the most effective means of transportation and Nashville's steamboats and port facilities were not soon rebuilt. The movement of people toward urban agglomerations was reflected in the growth of the town's population, which increased from 16,988 in 1860 to 43,350 twenty years later. In addition, Nashville's first street railway line, which enabled more of its citizens to reside beyond walking distance of the commercial district, was in operation by 1866. Within three decades of the War, the development of industry; the lessened dependence on the river; the growth of population; and the addition of a city transportation system had stimulated a rapid expansion of the corporation limits, both across the river and away from the river (Fig. 4). Thus, the Civil War marked the beginning of changes that opened the way for the modern era in the townscape of Nashville, Tennessee.

[19] See, for example, reports of floods in Nashville *Republican Banner* for December 28, 1852; January 28, 1854; and December 11 and 15, 1857.

[20] Phillip Bacon, "Some Problems of Adjustment to Nashville's Site and Situation, 1780-1860," *Tennessee Historical Quarterly*, XV (December, 1956), 322-329.

# GEOGRAPHY AND THE NEWS

LORRIN KENNAMER, JR.
University of Texas

Every daily paper printed is a daily lesson in geography for the reader. The happenings of the world as reported in our papers serve more each day to illustrate the interrelationships of countries and peoples of our planet, the Earth. The typical daily of a town of medium size will take the reader overseas to 30 or 40 places before it can complete the news coverage for that day. (What is the average for your daily paper(s)? Circle with red pencil each foreign place mentioned in one issue.)

It should not be forgotten that the word "news" indicates its geographic background, i.e., "*N*orth*E*ast*W*est*S*outh." But to understand the current event we must learn more of its geographic background than just its location and direction from us. It is generally agreed that geography is very important as a part of the general education of every citizen. When is it more important and more pertinent than when it is furnishing a broader understanding to the news of the day. Surely, no other social science has greater pertinency for the current scene. However, this is not true if we use only the most limited aspect of locational geography. We cannot be satisfied with just having our students go to the map and point to the location of something and then return to their seats. Geography has more to offer to news interpretation in our classrooms than just pointing to places.

The following questions are submitted as suggestions for getting to the geography behind the news. These questions can be used in your current events period during the week if that be your procedure or they can be used to broaden news events to introduce a new unit as well as to culminate a unit of learning.

Assume any event in international news and ask the following questions of the event:

1. Where did the news event take place? What direction is it from where you live? Approximately how far away is the place of the event? (Use a piece of string with your globe. Point in the direction from where you stand in your classroom.)
2. On what continent is the place found? Where on the con-

tinent? What are the neighboring countries? How are they involved in the news event if they are? Are any countries involved other than the neighboring countries? Why and how?

3. How would you describe the landforms of the area involved? Are they in any way involved in the event? What bodies of water are near if any?
4. From the latitude of the place involved what can you surmise about the range in the number of hours of daylight and darkness from season to season? What is the approximate length of the growing season? What is the general climate of the area? What season is taking place at this time? Is the area one of adequate rainfall for agriculture without irrigation?
5. What do the people do to make a living in the area involved? What generalizations can be made about the types of agriculture carried on? What are the major manufacturing industries of the area? Do the agricultural and manufacturing industries influence you in any way? If so, in what way?
6. What should be known about race, language and religion of the area involved in the news event?
7. What are the major resources of the area? How are they used? Do we use any of the resources of the area? Which ones? How well can we get along without them? What are the major items of international trade originating in the area of the news event? Does a map suggest any significance in the location of the area as related to transportation routes?

The above questions are furnished as suggestions. What questions would you ask? What questions will your students ask?

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## Annual Meeting in St. Louis

Have you made your hotel reservations in St. Louis? We plan to see you in the Jefferson Hotel. Have you made your reservations for the short or long field trip? If you haven't made your field trip, banquet and luncheon reservations, write to Dr. John Morris, Department of Geography, University of Oklahoma in Norman and ask for descriptions of events and then, return your reservations by air mail.

# LOCATIONAL PATTERN OF THE NEW CENTERS OF THE INDIAN IRON AND STEEL INDUSTRY*

PRADYUMNA PRASAD KARAN
University of Kentucky

During the last few years considerable national attention has been focused on industralization in India, with the greatest interest centering on the development of iron and steel and mineral-based heavy industries. At present all the basic pig iron and steel output of India is produced at three centers—at Jamshedpur and Asansol on the eastern fringe of Chota Nagpur Plateau, northwest of Calcutta and at Bhadravati, nearly 300 miles west of Madras, in south India (Fig. 1).[1] Their total production is one and a half million tons, which is over two and a half millions short of the present estimated requirements of the nation. To overcome this shortage the existing companies have launched a scheme to double their present production to three million tons by 1961. In addition three new million-ton state-owned steel works are being built under India's second Five Year Plan (1956-1961) to bring the steel production up to six million tons by 1961 in order to meet the increased domestic steel requirements of the third Five-Year Plan period. The new steel works under construction are located at Bhilai in Madhya Pradesh and Rourkela in Orissa nearly 450 and 300 miles west of Calcutta respectively, and at Durgapur in West Bengal nearly 98 miles northwest of Calcutta (Fig. 1). The six million tons target for 1961 can undoubtedly be met, if the three new plants are completed on schedule and the expansion program of the other producers are carried out. Not only can the goal be achieved, but it may even be exceeded. The following survey analyzes the locational pattern of the three new centers of the Indian steel industry which are under construction at Bhilai, Rourkela and Durgapur.

All these new iron and steel plants are being built for the Indian Government by industrial interests of foreign countries who have recognized that a fair profit awaited them thru plant construction, interest on loans, machinery orders, technical operation assistance and future bilateral agreements. The Soviet Government and the private German and British industrial interests tendered pro-

* Financial assistance for this study was provided from the University of Kentucky Faculty Research Fund.

[1] John E. Brush, "The Iron and Steel Industry in India," *Geographical Review*, Vol. 42, January, 1952, pp. 37-55.

posed plant schemes to the Indian Government. The West German concern Krupp-Demag signed an agreement in 1953 to construct

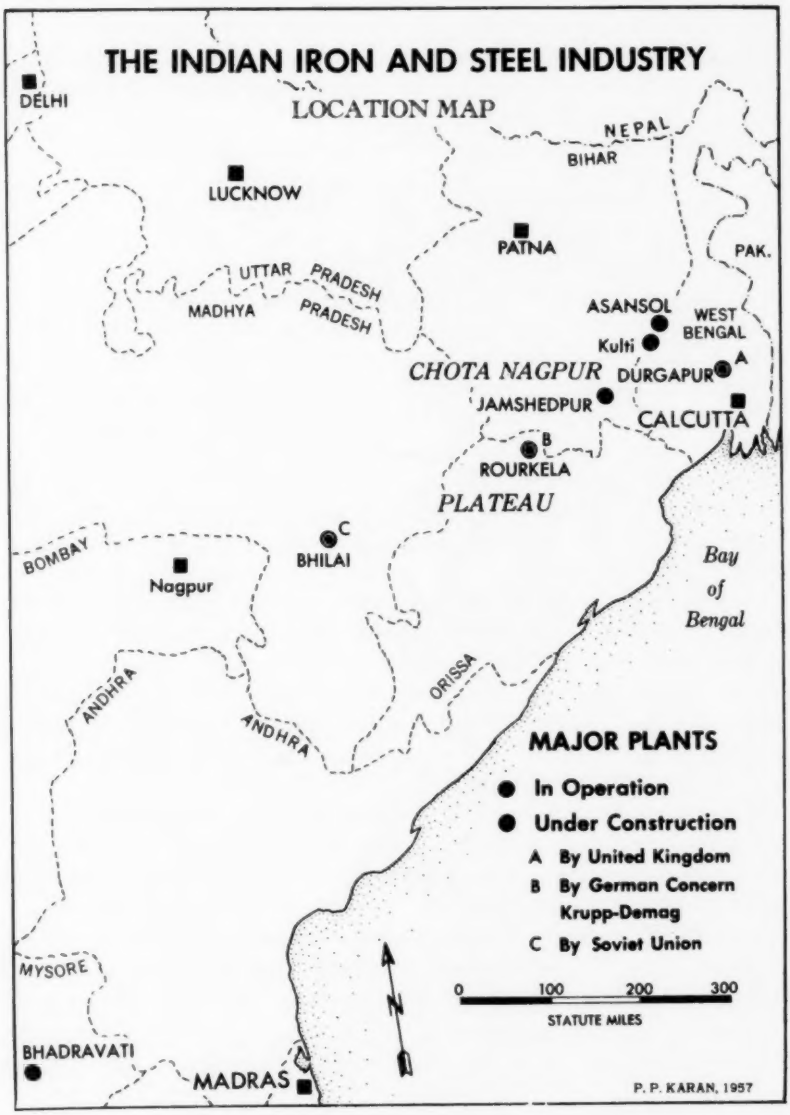


FIG. 1

the first new steel plant at Rourkela in Orissa. This was followed in 1954 by the acceptance of a proposal from the Soviet Union to build a second plant at Bhilai in Madhya Pradesh, and in 1955 of a plan submitted by a consortium of British Steel interests, known as the Indian Steel Works Construction Company of London, for setting up a third plant at Durgapur in West Bengal. The new steel plant at Bhilai is the first major project outside the Communist Bloc, to be financially aided and constructed by the Soviet Union.

### The Bhilai Steel Works, Madhya Pradesh

The new integrated iron and steel works at Bhilai, being built by the Soviet Government, is designed for a capacity of one million tons of steel ingots and 750,000 tons of rolled finished steel products. Completion of the entire plant is planned for late 1958 with several major sections scheduled for operation a year earlier. This $241 million addition to the Indian steel industry is being financed by the Soviet Union at the low annual interest rate of two and one-half per cent and with further agreement that the principal and interests are payable in Indian rupees over a twelve-year period.[2] The Soviet Government is supplying all the plant and equipment, technical personnel, and is training Indian technicians in the Soviet Union.

Setting up this steel mill involves the developing of a new industrial site, a new town, new transportation lines, and new sources of iron ore, coal and limestone (Fig. 2). Hematite ore of which samples have analyzed 66-69 per cent metallic iron will be mined from the Drug district southwest of Bhilai.[3] A 52-mile railroad is under construction to exploit the Drug iron deposit and transport the ore to Bhilai steel works.

Coking coal will have to be brought from the Jharia field about 450 miles northeast of Bhilai. However, an ample supply of non-coking coal for power is available at Korba coalfield a hundred miles northeast of the plant site. A large thermoelectric station on this coalfield has been linked with the steel center to supply 90,000 kilowatts of power to the plant.[4] Limestone for flux will come from a distance of fifteen miles. A new railway is being built to the

[2] "The Indian Steel Industry," *Monthly Statistical Bulletin*, British Iron & Steel Industry Federation, Vol. 30, No. 2, February, 1955, p. 7.

[3] *Coal and Iron Ore Reserves of Asia and the Far East*, Economic Commission for Asia and the Far East, United Nations, Bangkok, 1952, p. 67.

[4] *Indiagram*, Information Service of India, Washington, D.C., No. 3, February 1, 1957, pp. 10-11.

nearby limestone deposit which will supply the requirements of a cement factory being set up on the way.[5] A four-square mile reservoir will be filled by Mahanadi waters and a canal passing close to the town will serve as a circulating and cooling reservoir for the steel mill. Between the steel works and Bhilai township a one-mile wide forest belt is being planted to prevent hot air from the factory entering the town. The township is growing rapidly; the office

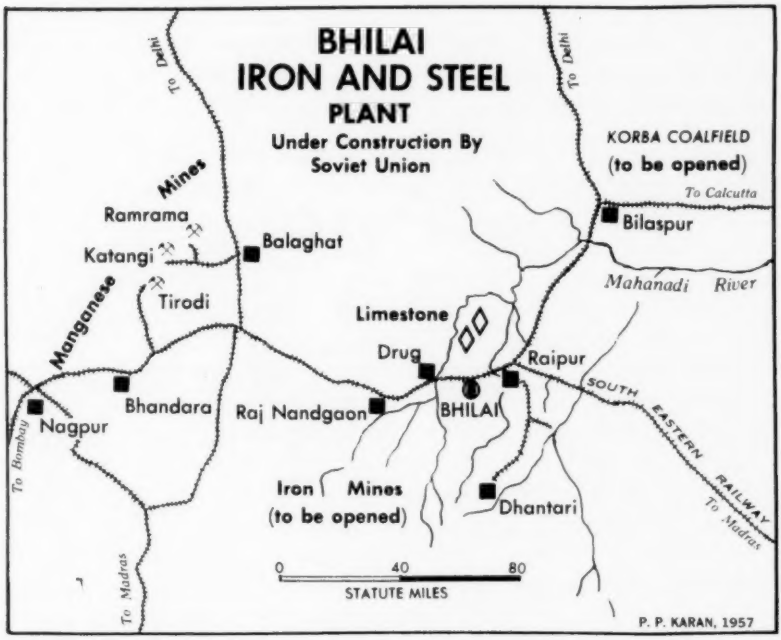


FIG. 2

buildings near the plant site, two labor camps with modern amenities and some residential buildings have been completed.

### THE ROURKELA STEEL WORKS, ORISSA

The Rourkela plant, known as the Hindustan Steel Company, is being built with the West German technical aid. It was initially planned for a capacity of a half million tons of finished steel annually but this intended capacity was doubled before construction

[5] *Indiagram*, Information Service of India, Washington, D.C., No. 11, October 26, 1956, p. 8.

had barely begun. Several score of Indian technicians and engineers began training in West Germany in 1954-55, and Orissa Government began schemes of training several hundred semi-skilled workmen to take over the management and operation of the new plant. Unlike Bhilai and Durgapur plants, which are partly erected with foreign financial assistance, the Hindustan Steel Company is completely financed by the Government.

The steel works will obtain coking coal from the Jharia field

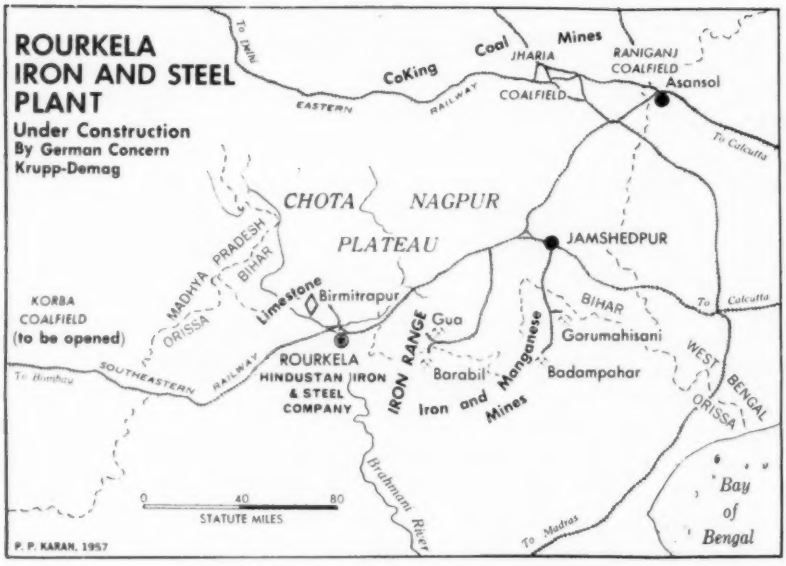


Fig. 3

about 200 miles to the northeast (Fig. 3).[6] However, it is expected that the plant will convert to the Krupp-Renn process of using low-grade coal and iron ore to produce iron nodules in rotary kilns and refining them to pig iron in electric furnaces. If this method is employed, enormous savings of the scarce coking coal will be possible. This process will allow the use of the coal from Korba field. This coal field contains large reserves of good-quality non-coking coal, and the nearest mines are only 70 miles away from Rourkela. By comparison the Jharia coking-coal supplies are nearly 200 miles

[6] For an analysis of the coal resources of the Jharia field and iron ore resources of the Bihar-Orissa Range from which this steel mill will obtain its raw material supplies, see Pradyumna P. Karan "Economic Regions of Chota Nagpur, Bihar, India," *Economic Geography*, Vol. 29, No. 3, July 1953, pp. 221-225, and pp. 231-234.

from the new plant. The new 123,000 kilowatts Hirakud hydroelectric station on Mahanadi, less than 100 miles from Rourkela, which began to operate early in 1957, can be depended on as the source of most electrical power.

Iron ore and manganese will be obtained from the Bihar-Orissa Iron Range, 35 miles away, and sufficient limestone deposits lie adjacent to the plant site to complete the requisites for its operation (Fig. 3). New mechanized iron ore mines are being opened to supply an estimated two million tons of ore yearly. A new dam and reservoir will soon be completed and will assure a sufficient water supply. Included in this project is a new town. The $252 million Rourkela works is scheduled for completion in 1959.

### DURGAPUR STEEL WORKS, WEST BENGAL

Durgapur plant, which is being built with the assistance of British steel interests, is located 98 miles northwest of Calcutta. The Indian Steel Works Construction Company of London, a consortium of British steel interests, will bear the cost of procuring plant equipment and materials from Britain for the steel mill and the cost of labor, erection and equipment procured in India will be shared by the Government of India.

Coal, iron ore, and limestone and other raw materials will be drawn from approximately the same sources as those which supply the Indian Iron and Steel Company's plants at Asansol, 26 miles west of Durgapur. It will use the better quality coking coal from Jharia field nearly 45 miles to the west, and iron ore from Bihar-Orissa Iron Range about 150 miles to the southwest (Fig. 4). The location of the plant at Durgapur reflects partly the attraction of raw materials. Tho Durgapur is perched neither on the coking coal field nor on the ore mines, it occupies a somewhat central position in relation to both. Except for Birmingham, Alabama, raw material assembly at Durgapur requires fewer ton-miles of transportation (462) than of the large steel centers in the United States. Pittsburgh requires 604; Gary, Indiana, 1,037; and Fontana, California, 1,052 ton-miles to bring together coal and ore and flux necessary to manufacture one ton of pig iron.[7] In the United States raw materials move long distances to market-oriented steel centers situated between sources of coal and iron or far from both.[8]

Apart from the advantage of easy rail access to the princi-

[7] Brush, *op. cit.* p. 52.

[8] Chauncy D. Harris, "The Market as a Factor in the Localization of Industry in the United States," *Annals of the Association of American Geographers*, Vol. 44, No. 4, December, 1954, pp. 317-318.

pal raw materials, Durgapur plant has a location close to the "Hooghly-side" industrial strip of Calcutta containing several steel-using industries. The large market for steel in the industrial region around Calcutta, along with the possibilities of an outlet for surplus pig iron, as well as finished steel thru that port, exercised considerable influence on the location of iron and steel works at Durgapur. The Damodar River would ensure adequate water supply for the plant and the improved Damodar-Hooghly river

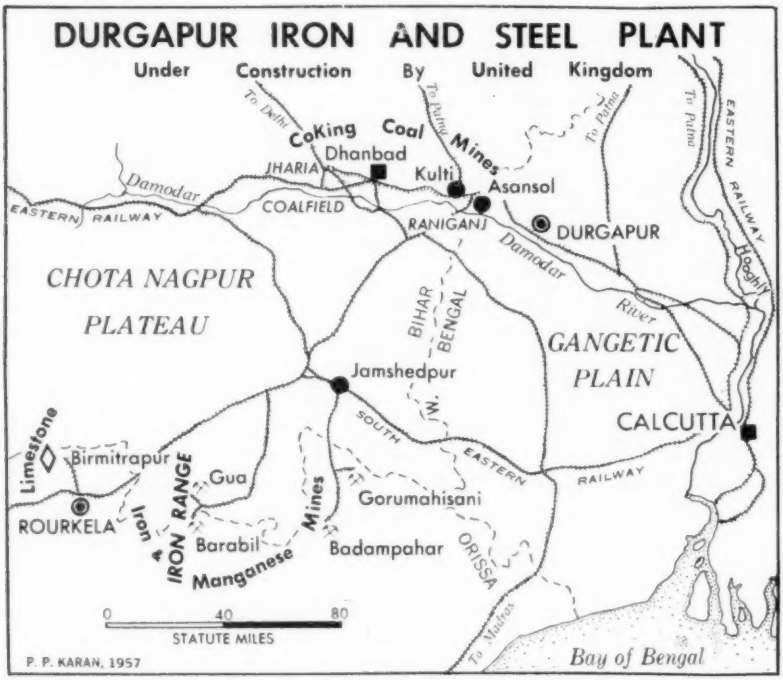


Fig. 4

system will provide cheap water transport by sea-going vessels to South India. Like the two other new works, ownership of this $267 million plant is held by the Indian Government. Pig iron is expected to be produced in Durgapur plant by 1959 and steel by 1960. The annual production capacity will be 350,000 tons of foundry grade pig iron and 790,000 tons of structural steel products in addition to one million tons of steel ingots. With relatively minor plant additions, steel milling and rolling capacity can be increased 25%.

## LOCATIONAL ANALYSIS

It seems apparent from the data presented above that altho some dispersion has occurred in the industry, the basic locational arrangement of the three new iron and steel plants largely reflects concentration of production in northeast India, and particularly around Chota Nagpur Plateau. An important attractive factor in the location of the new plants is the relation of the industry to the distribution of raw material supplies. The bulk of the rich coal, iron ore and manganese deposits are concentrated in northeastern India. The iron and steel plants located in and around this part of India could be assured of raw materials requirements at low cost.

Available water supply appears to be a factor in determing precise location of the plants. Most of the rivers of West Bengal, Orissa, and Madhya Pradesh dwindle to mere trickles in the winter and spring months. Locations convenient to both coal and iron ore reserves and having sufficient year-round water supplies are rare. The industry has largely avoided the western Damodar coking coal fields presumably because of inadequate water supply. The Rourkela plant has been sited just downstream from the junction of two major tributaries of Brahmani River, the Bhilai plant is placed so as to utilize the waters of Mahanadi, and likewise Durgapur plant is well located on the lower Damodar River.

The market factor also played a role in the location of the new centers of the Indian steel industry. The Durgapur and Rourkela plants have superb location amidst the markets of the Bihar-Bengal Industrial Belt. Bhilai itself, while not situated amidst important market area, has an effective location, considering the distribution of sources of raw materials, for serving the markets of western and central India.

Another factor which should be mentioned is the emphasis placed by Indian planners on the development of resources in the so-called "backward" areas. Two of the three plants, at Bhilai and Rourkela, are located in the industrially backward states of Madhya Pradesh and Orissa possibly because of the deliberate Indian industrial location policy of encouraging development in these regions. Each of these new centers is, in so far as possible, to develop its own raw material base and eventually its own industrial structure as a part of the program of regional self-sufficiency. One of the reasons for this policy, aside from the obvious one of resource development, is an attempt to reduce the acute load

on the existing railroad system. As far as Bhilai plant is concerned, part of the basic motivation may have been the problem of military security.

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## PLACE NAMES: A NOTE ON THE LITERATURE

**Fritz L. Kramer**
University of Nevada

Knowledge of location is a necessary basis for geography, yet, semester after semester, there are many students in our college classes with only a hazy notion of places and where they are. The reaction to the old method of learning by rote long lists of names has perhaps gone too far in the opposite direction. Together with the location we have to know the name of the place to be located. Retention of a place name will be greater if an item of interest is associated with the name. The place name vocabulary of the student can be enlarged painlessly when the names themselves begin to have meaning.

Most people, young or old, are interested in the meaning and origin of names. A teacher can make his class sit up when he speaks on this topic. We live intimately with names to such an extent that we tend to take them for granted, and only when a new and unusual name crops up do we take notice. To the student, particularly in the lower grades, most names are new and unusual and here lies the opportunity for the teacher.

Much cultural and physical geography comes to life in the meaning of place names. Koblenz, Germany, commemorates the northward advance of Roman armies. The name derives from the Latin *confluens* and with this knowledge it will be difficult to forget that the city lies at the confluence of two rivers, the Mosel and the Rhine. In Spain, especially in Andalusia, several river names begin with the syllables Guad- or Guada- which should remind us of the Moslem occupation of the Iberian Peninsula. Guad- is derived from the Arabic word "wadi," river, as for example in Guadalquivir, from *wadi-al-kabir,* the river of kabir. Knowledge of classical languages has been on a steady decline in this country and former generations were not as ignorant. In 1825 a town was laid out at the highest point, or summit, along a canal connecting Lake Erie with the Ohio River. It was to be named Summit, but

to avoid the triteness of this designation the term was translated into Greek and so we have Akron. In the arid Snake River plain of Idaho, trees grow only along streams; and to the travelers of the early 19th century (many of whom were French), this was a welcome sight. These trees were the significant thing for which many of the waters courses were named; among them was *Rivière Boisée* or Woody River, named, according to tradition, by Captain Bonneville. The fort and the town built on this river became Boise.

## SOME LITERATURE ON PLACE NAMES

Until recently this type of information has not been readily available in the United States, at least not in collected form. Fortunately the situation has been improving during the past years and promises to improve further with growing interest. A large and slowly increasing source of information are the volumes dealing with place names in the individual states of the United States. Coverage is, however, quite uneven and ranges from excellent to virtually non-existent. Books like *California Place Names* by Erwin G. Gudde (Berkeley, 1949) or *Oregon Geographic Names* by the late Lewis A. McArthur (3rd ed., Portland, 1952) may well serve as models for this type of study. Very little work has been done on a comparable scale for Kentucky, Mississippi, Nevada, and several other states. In the existing volumes may be found, usually alphabetically arranged, information on the origin of the geographic names ocurring in the respective states, occasionally with a considerable body of data on the geography and history of the places discussed.

Perhaps the best current and continuing source on names of all kinds is a yet little known publication, *Names*, now in its fifth year. This quarterly, published by the American Name Society, contains a wealth of information as the following examples will indicate. The first issue of this periodical considers the name America and tells in detail how "a German cosmographer, teaching in a French college, wrote the name of an Italian explorer on a Latin map showing the new continent which was essentially Spanish at that time."[1] In the same number, a short paper recounts the fight over the "proper" pronunciation of Los Angeles, and another tells of the dual origin of Brooklyn. In other numbers of

[1] Erwin G. Gudde, *Names: Their Significance and Importance in Teaching*, American Name Society, Berkeley, 1952.

*Names*, attention is given to the names California, Delaware, Alaska, to Ohio names, to the "Egypt" of southern Illinois, to the names of the Great Lakes, etc. One paper traces the transfer of the name Andover from England to America, thence westward from Massachusetts across the continent as far as California. The topics are not restricted to American names and the wide geographic range of interest is reflected in titles like "Slavic Names on Cyprus," "Name Changes in Israel," "Arabic Place Names in Spain," "Friesian Family and Place Names," "Norwegian Place Names," and so on. In each issue are, furthermore, many smaller items of interest. Not restricted to geographic nomenclature, *Names* will appeal not only to geographers but also to teachers in other fields.

George R. Stewart's *Names on the Land*,[2] written by a skilled novelist and scholar, deals with the major names on the map of the United States. This is not merely a collection of information but it also contains the results of Stewart's original research such as his discovery that the name Oregon derives from "Wisconsin." Informative as well as entertaining, this volume should be required reading for geographers.

There are innumerable other papers on this or that name or group of names, scattered thruout many journals. A guide to this body of information is Seely and Sealock's *Bibliography of Place Name Literature* (American Library Association, Chicago, 1948) which is from time to time brought up to date in the pages of *Names*.

Using the information gleaned from these sources in the classroom will do much to enliven the study of place geography. Since a consideration of the origin of names invariably leads into history, linguistics, even psychology and other fields, this topic will serve well to broaden and stimulate the interest of teacher and student alike.

[2] Random House, New York, 1945. A revised and enlarged edition is to appear soon.

## Bring Your Friends to St. Louis

How many teacher friends and students are you bringing to the NCGE in St. Louis? Remember you are welcome whether you are members of our organization or not. According to the stars, the weather for the meeting is going to be perfect and the programs superb.

# THE JAMAICA BAUXITE INDUSTRY

ROSS PEARSON
University of Michigan

One of the most significant developments in the Caribbean area, within recent years, has been the establishment of bauxite mining in Jamaica. By the end of 1955, after two and one-half years of operation, Jamaica had risen to second place among the world producers of this ore of aluminum. Altho the new industry is of considerable importance to the economy of the island it is of even greater significance to the North American aluminum industry. For several years the United States and Canada have been faced with ever increasing demands for this metal, while their domestic reserves of ore have been rapidly diminishing.

## THE RESOURCE

It had been known for some time that the red soils of Jamaica contained high percentages of iron and alumina, and were low in silica, but it was not until the early 1940's that their potential importance as a raw material for aluminum metal was recognized. Prospecting work, which began in 1942, revealed that there were large deposits of bauxite of commerical value in several sections of the island. However, in 1943, when a small cargo of the ore was shipped to the United States for experimental purposes, it was discovered to be quite different from the bauxites normally used in North American plants. Further mining was postponed until research could determine how these ores could best be utilized.[1]

Before the discovery of the Jamaca deposits there were two kinds of bauxite being used for the production of aluminum. A monohydrate variety, boehmite, makes up most of the European bauxites and a trihydrate type, gibbsite, is the most common North and South American ore. The Jamaican bauxites are a mixture of the two, with the monohydrate making up as much as 15 per cent of the total.[2] The problem, then, in handling these deposits in

[1] It should be noted that the word "bauxite" does not designate a specific mineral, but is a general term which refers to a rock or a mixture of minerals with sufficiently high alumina content to be useful as an ore of aluminum. Whether a rock containing alumina is bauxite or not depends upon the demands of the aluminum industry at the time and the technological practices that have been developed for the various types and grades of ore.

[2] E. A. Hassan, Jr., "Jamaica—A New Source of Aluminum Ore" (Paper read before the San Francisco Section of American Institute of Mining, Metallurgical, and Petroleum Engineers, San Francisco, January 14, 1953).

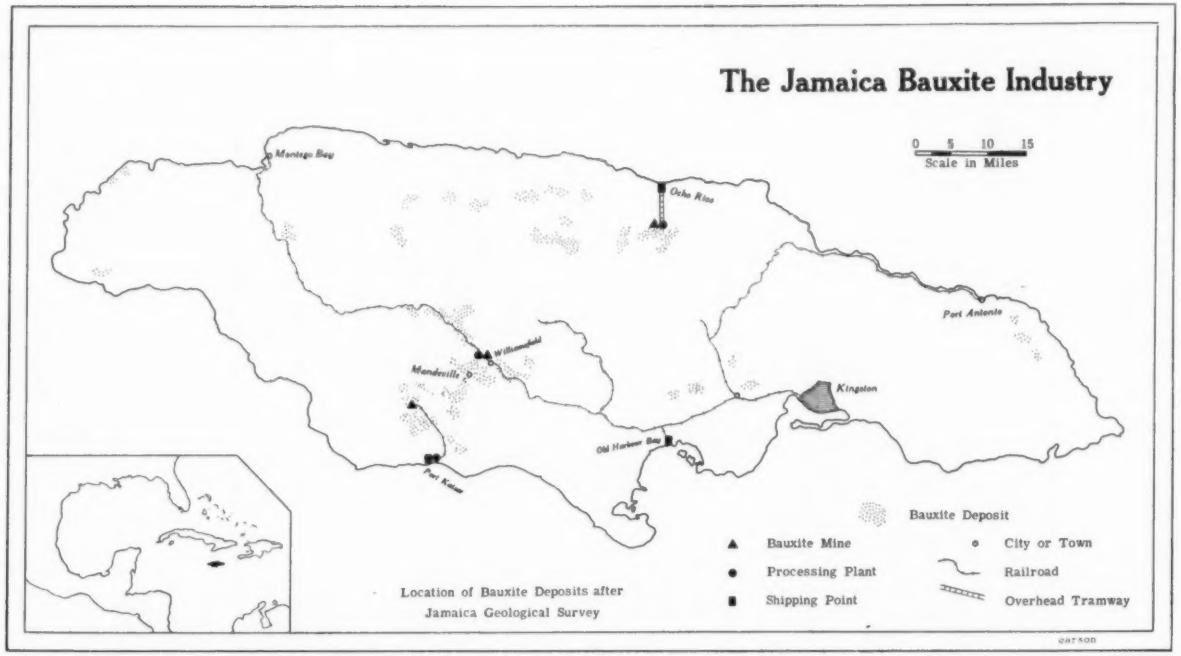
The Jamaica Bauxite Industry
0 5 10 15
Scale in Miles
Montego Bay
Ocho Rios
Port Antonio
Kingston
Old Harbour Bay
Port Kaiser
Bauxite Deposit
Bauxite Mine
Processing Plant
Shipping Point
City or Town
Railroad
Overhead Tramway
Location of Bauxite Deposits after
Jamaica Geological Survey

FIG. 1

American plants results from the fact that the processes are design to treat the trihydrate mineral and cannot extract ores containing significant amounts of the monohydrate. The solution for concerns utilizing Jamaican deposits has been to either modify existing plants, so that ore with large amounts of boehmite can be handled, or to construct completely new facilities.

The Jamaica bauxites are a soft, fine-grained, earthy material and are of uniformly high porosity and permeability. They are usually a dark reddish color. Alumina content, altho generally lower than that of South American ores, averages above 50 per cent. The relatively low alumina content is offset by the high uniformity which is characteristic of sizable deposits and the fact that the amount of silica present in unusually low.[3] The larger beds occur at the bottoms of depressions in a white limestone formation, which covers a large part of the island, and vary in thickness from a few inches to more than 114 feet. At the present time it is considered uneconomical to mine where the formation is less than 5 feet thick. Altho bauxite deposits are widely scattered they are most extensive and largest in a broad band extending from northeast to southwest across the central part of the island (Fig. 1). The three most important mines are located in this region: the Kaiser Bauxite Company mine a short distance south of Mandeville, the mines of Alumina Jamaica Ltd., north of Mandeville, and Reynolds Jamaica Mines Ltd. mine, south of Ocho Rios.

## MINING OPERATIONS

The $12,000,000 Kaiser Bauxite Company establishment in Jamaica consists of three separate physical plants. The main offices, where management functions are carried out, are located in a group of buildings on the rim of a plateau at the village of Spur Tree (6 miles southwest of Mandevile). The mines are situated in a lowland farther south and are 13 miles from the drying and shipping facilities at Port Kaiser. The highly mechanized mining operations are conducted from the surface. First the scrub forest cover and a foot or so of overburden are removed with the use of bulldozers and the mining is then carried on with power shovels. The shovels pick up the ore which has been exposed[4] and drop it into dump

[3] O. C. Schmedeman, "Caribbean Aluminum Ores," *Engineering and Mining Journal*, June 1948, p. 81.

[4] Mining operations are greatly simplified by the relatively great thickness of the ore bodies, and the fact that the red bauxites are so highly contrasted in color from the surrounding white limestone deposits. When the shovel operator encounters white limestone he knows that he is at the edge of the deposit and shifts to another site.

trucks, two tons per bite, which deliver it to the railhead located less than a mile away. A company owned railroad, has been constructed from the mines to the docks and the dryer at Port Kaiser. The loaded railroad cars, upon reaching the port, are taken directly to an unloading platform where heavy machinery turns each car upsidedown over chutes connected with conveyor belts, which carry the bauxite to a stockpile adjacent to two oil-heated drying kilns. Bulldozers move the ore to the kilns and a system of conveyor belts

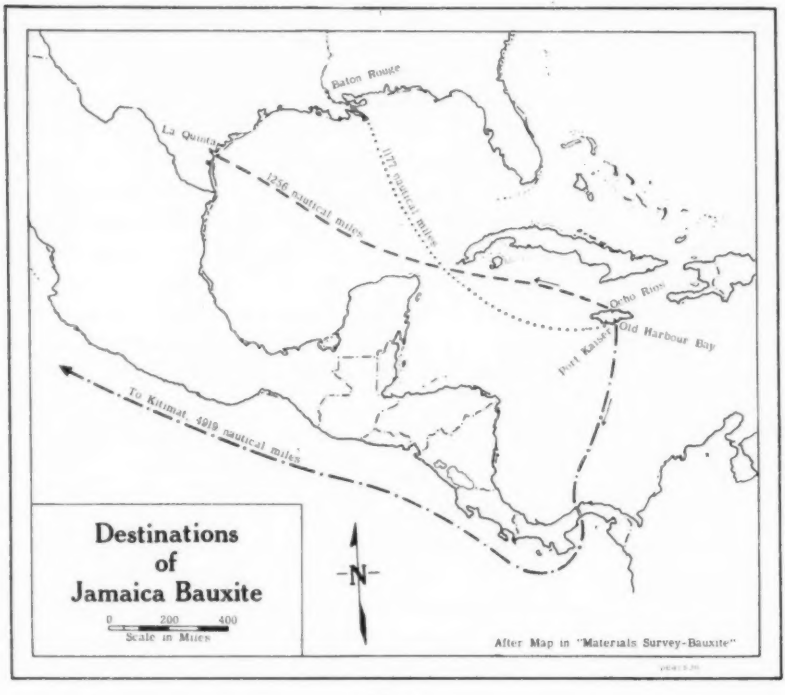


FIG. 2

transfer it from the kilns to the docks. Gravity chutes deliver the ore from the docks to ocean-going vessels.

The first shipments from the Kaiser mines began in the spring of 1953. By the end of the year bauxite was being shipped to the Kaiser alumina plant at Baton Rouge, Louisana, at the rate of 650,000 tons annually. By 1954 the output had been increased to over a million tons a year[5] (Fig. 2).

[5] *The West Indian Review*, Vol. 7 (September 24), 1955, p. 26.

Reynolds Jamaica Mines Ltd., a subsidiary of the Reynolds Metals Company, has an establishment in Jamaica which involved the investment of $17,000,000. Mining, drying, and docking activities of this company are very similar to those of the Kaiser organization. The mines are located in the hilly region of the north central part of Jamaica, some 6 miles south of the resort town of Ocho Rios. Mining operations are mechanized and the ore-drying facilities are located in the immediate vicinity of the mines. The essential difference between the Reynolds and the Kaiser operations is the mode of transportating the bauxite to tidewater. The country between the mines and the dock at Ocho Rios is very hilly, with some ridges being over 2,000 feet in elevation, so the company constructed an aerial tramway over which cars of one ton capacity race along at the rate of one every 17 seconds. The tramway delivers the ore to storage silos which are connected with the dock by a system of conveyor belts and chutes.

Reynolds made its first shipment in the summer of 1952, was producing 750,000 tons a year by the end of 1953, and increased to an annual output of 800,000 tons in 1955.[6] The ore of this company goes to a new alumina plant at La Quinta, near Corpus Christi, Texas.

The third concern conducting mining operations in Jamaica is Alumina Jamaica Ltd., a subsidiary of the Aluminum Company of Canada. Its operations, involving an investment of $40,000,000 include not only the mining of bauxite but that of converting ore into alumina as well. The mines and the alumina plant are located just north of Mandeville near the town of Williamsfield. By the end of 1953 Alumina Jamaica was producing approximately 100,000 tons of alumina[7] a year and two years later the output had been increased to 280,000[8] per annum. The alumina is shipped by the regular Jamaica railway system and a new connecting spur to a port on the south shore of the island called Old Harbour Bay. For a time the alumina went to Norway but now the entire production is sent to the parent company's new smelter at Kitimat, British Columbia.

[6] *Ibid.*

[7] In 1951 an average of 2.21 pounds of domestic dry bauxite produced 1 pound of alumina; 1.89 pounds of alumina produced 1 pound of aluminum or 4.18 pounds of dry bauxite was required to produce 1 pound of aluminum. *Materials Survey—Bauxite*, United States Bureau of Mines, Washington, 1953, p. RA-4.

[8] *The West Indian Review, op. cit.*, p. 26.

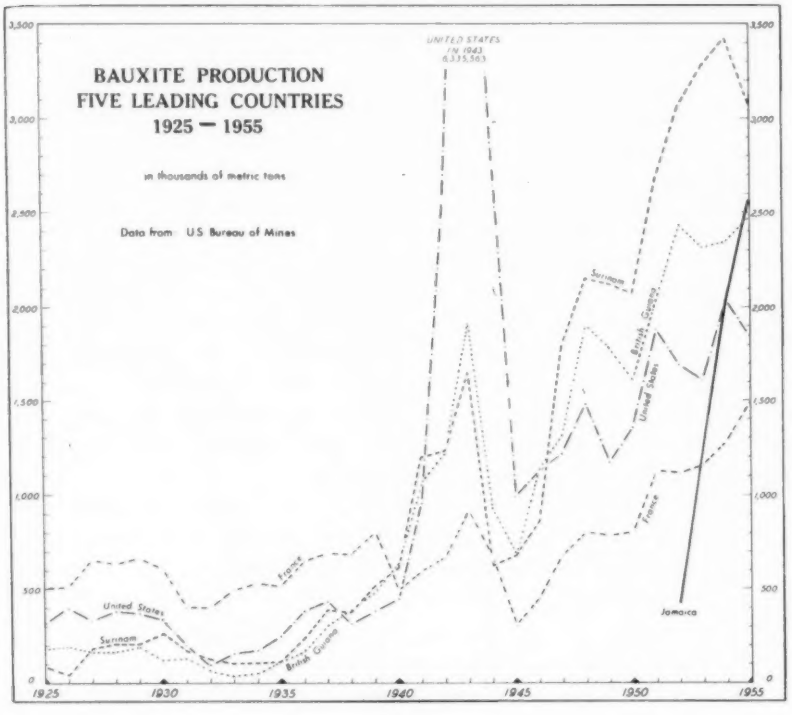


Fig. 3

The output of these companies, in three and one-half years of operation, has increased (Fig. 3) so greatly that Jamaica is now one of the leading producers of bauxite. By 1954 its production had slightly exceeded that of the United States and in 1955 an output of 2,570,237 metric tons placed it ahead of British Guiana so that it ranked second only to Surinam (Dutch Guiana).

### Significance to the American Aluminum Industry

The very rapid increase in the production of aluminum has been an important feature of the metallurgical industry for more than a decade. Smelter production of this metal in the United States increased from 163,000 short tons in 1939 to 938,000 in 1952 and in 1956 it reached 1,679,000.[9] In this 17 year period aluminum production increased 930 per cent and it has replaced copper as the second

[9] Data from the United States Bureau of Mines.

most important metal being used in the country. During the same period steel production increased 118 per cent and copper only 44 per cent. Since lightness is one of the outstanding properties of aluminum, data on tonnage production does not give a true indication of its importance among metals. If production by weight is converted to production by volume,[10] the amount of aluminum used in the United States in 1956 was almost twice that of copper and zinc (the third and fourth metals in tonnage) combined.

Expansion of bauxite production to supply the growing demands of the market has made the United States increasingly dependent upon foreign sources of ore. Domestic deposits which were never large have been heavily exploited and those which have

TABLE 1

ESTIMATED RESERVES OF BAUXITE*

| | Millions of Metric Tons | Percent of Total |
|---|---|---|
| Jamaica | 320.0 | 19.9 |
| Hungary | 250.2 | 15.6 |
| Gold Coast | 229.4 | 14.3 |
| Brazil | 192.0 | 11.9 |
| Yugoslavia | 105.0 | 6.6 |
| British Guiana | 65.0 | 4.1 |
| Greece | 60.0 | 3.7 |
| France | 60.0 | 3.7 |
| China | 50.0 | 3.2 |
| Surinam | 50.0 | 3.1 |
| United States | 40.5 | 2.5 |
| Soviet Union | 30.0 | 1.9 |

* From *Materials Survey—Bauxite*, United States Department of the Interior, Bureau of Mines, Washington, 1953.

not been exhausted are of low grade and require either underground mining or heavy stripping operations. For a period of three decades the United States has imported at least as much bauxite as it has mined each year. Most of these imports have come from Surinam with lesser quantities being secured from British Guiana and other areas. Altho the reserves of the Guiana colonies are far from being exhausted, a recent survey by the U.S. Bureau of Mines (Table 1) credited them with only 115,000,000 metric tons, or 7.2 per cent of the world supply, of metal grade bauxite. Jamaica, on the other hand, has an estimated reserve of 320,000,000 metric tons or 19.9 per cent of the known world supply. Altho estimates of re-

[10] A cubic foot aluminum ingot weighs 170 pounds, one of steel 490 pounds, one of copper 556 pounds, and one of zinc 440 pounds. *Aluminum*, War Changes in Industry Series, Report No. 14, United States Tariff Commission, Washington, 1946, p. 35.

serves of any ore may change as new deposits are discovered and as improved technology renders known low grade deposits available, Jamaica has such a high percentage of the world's reserve of bauxite that it should stand out as an even more important source of this mineral in the future.

Location is another factor which indicates that the American aluminum industry will become increasingly more dependent upon Jamaica bauxites. Transportation charges contribute an important part of the total cost of bauxite delivered to alumina plants. Any saving in freight costs may be small when computed on a cost-per-ton-at-plant basis but the large amounts imported each year (5,221,008 tons in 1955) make it an important consideration in the over-all picture.

Jamaica ores have the initial advantage resulting from the fact that the island is much nearer the coast of the United States than any other sizeable deposits in the western hemisphere. Sea distances between Jamaica and Gulf Coast ports of the United States are less than half those from Surinam or British Guiana. An additional advantage, from the standpoint of national defense, is that the 1,100 to 1,200 mile sea route from Jamaica is near enough to land so that all sections can be patrolled by shore-based aircraft at all times.

The Jamaica bauxite reserves are almost all located within 20 miles of the coast and it is relatively easy to move the ore from the mines to deep water harbors. Contrast this situation with that in the Guianas where the bauxite must be shipped down-river by shallow draft vessels and by sea to Trinidad where they are either topped-off or where the ore is transferred to another ship. The advantages of location of the Jamaica bauxite ores is illustrated by the fact that freight costs to the Kaiser plant in Baton Rouge are about one-quarter of what they are from Surinam, or the fact that bauxite can be moved from Jamica to Baton Rouge for less than half of what it costs to ship it from the nearby state of Arkansas.[11]

In Jamaica bauxites it now seems evident that the aluminum industry of North America has secured a new and dependable source of raw material, easily accessible to coastal plants, that will meet its needs for years to come. Whether the slight decline in the production of bauxite in the United States from 1954 to 1955

[11] Hassan, *op. cit.*

is indicative of a trend is not clear, but the government has taken steps to ease the pressure upon domestic reserves. On July 16, 1956, the President signed Public Laws 724 and 725 which extends the suspension of duty on the importation of baxite and alumina, originally effective in 1954, for a two year period.[12]

[12] R. A. Heindl, "Bauxite in the Third Quarter 1956," Quarterly Bauxite Report No. 43, Mineral Industry Surveys, Bureau of Mines, 1956.

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## SOME ASPECTS OF THE BOUNDARIES AND FRONTIERS OF ISRAEL

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May marked the tenth anniversary of the creation of the modern sovereign state of Israel with the resultant expansion of its political boundaries towards Jordan, Syria, and the Red Sea—rebuilding the historical territory of Israel. With the immediate recognition of the great powers, the United States and the Soviet Union, the newly emergent small nation-state embarked upon a war of survival with the intervention of Jordanian and Egyptian armies, resolved to settle the dilemma of the Arab concept of the "two Israels"—colonial Israel and Israel militant.

Israel, a part of the former British mandate of Palestine has, at the present time, within its elongated and perforated boundaries, a total area of 8,048 square miles and an estimated 1,900,000 population (May, 1957), less than 1 per cent of all the Arab peoples. Israel's size, now four-fifths that of pre-war Palestine, is comparable with that of Massachusetts, which has 2½ times its population, however. The present boundaries of Israel enclose an area somewhat more restricted than the Palestine mandate with more than half of the land located in the desert of the Negev with less than 5 inches of rainfall. Jerusalem, the capital city, is partitioned between Israel and Jordan. There are several ports on the Mediterranean, Haifa being the most important, and to the South on the Gulf of Aqaba, Elath provides an outlet to the Red Sea. Israel by and large is a land of hills and valleys bordered on the Mediterranean by a coastal plain and on the east by the long and narrow rift valley of the Jordan.

## Historical Evolution

The Balfour Declaration of November 2, 1917, which viewed "with favor" the establishment of a "national home" for the Jews in Palestine, marked the transformation of the mystical concept of territory into a reality with the advent of the colonial phase of Zionism. It was during the inter-war period that the foundations were laid for the sovereign state of the future, by the consolidation of the territorial and human elements. A fusion of these elements created the dynamism necessary for the evolution of the core areas of the new state. Following World War II, the great wave of refugees—the *Kibbutz galuyoth* (ingathering of exiles)—from everywhere broke upon the shores of Palestine, a migration rather less than Zionism in character. It was this factor, primarily, with the resulting population pressures, which has brought forth the current problems of political geography in Israel.

In November, 1947, the United Nations General Assembly, with the recommendation of the British, voted for the political partition of Palestine into Jewish and Arab states to be linked in economic union, and Jerusalem was to be internationalized. As a result, the Israeli provisional boundaries were established upon unrealistic criteria fragmented as they were and almost completely indefensible in the face of rising Arab nationalism. The Arab nations surrounding Israel opened attack after independence was proclaimed in 1948, in an effort to recover territories claimed by them. During the ensuing struggle lasting into the following year, about 750,000 Arab refugees fled to temporary camps near the armistice line—most of them without means of livelihood.

In 1949, Israeli counter-attacks gained additional territory to the north of Haifa near the Lebanon border, west of the Jordan near Jerusalem, and in the Negev. Provisional boundaries and military lines were drawn under the armistice agreements of 1949, and were reaffirmed by current negotiations following the Israeli invasion of the Sinai peninsula last October in an effort to relieve border tensions and open the Gulf of Aqaba to free access for shipping. These boundaries and frontier zones offer little security, and contain many elements of dissolution as many are drawn separating opposing armies and not on valid geographical criteria (Fig. 1).

## Israeli-Egyptian Boundaries and Frontiers

The total length of Israel is 260 miles and the widest stretch (south of Beersheba) is 70 miles. The length of the land boundaries is 594 miles and of the water boundaries, 159 miles. Boundaries

and frontiers of greatest insecurity are those adjacent to Egypt and former Palestinian areas (the Gaza Strip) now under its control, a total length of 165 miles. Other such boundaries are those with Jordan which also include former areas in Palestine with borders twice as long as the Israeli-Egyptian line, a total of 332 miles.[1]

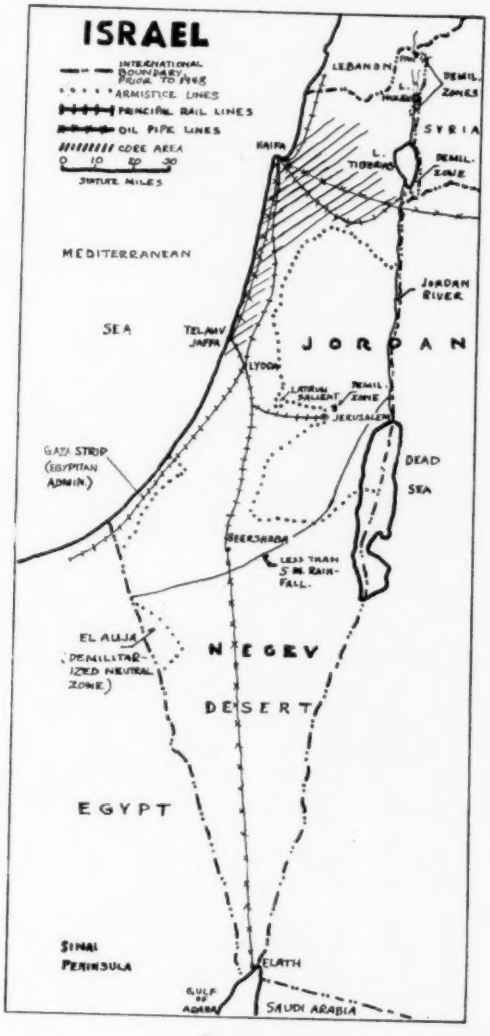


FIG. 1

On the Israeli-Egyptian borders, truce agreements set up the demilitarized zone[2] of El Auja and gave Egypt administration of the Gaza Strip, an integral part of the old Palestine mandate. This is a semi-arid region of coastal sand dunes and some other medium quality land, limited by low and variable rainfall of 5 to 12 inches and is geographically a part of the Negev. This hotly contested land contains 160 square miles, is 26 miles long and 5 to 8 miles wide and within 35 miles of Tel Aviv. Limited irrigation is carried on inland where large citrus groves are located producing good crops with an important exportable surplus. The population of the Gaza Strip is the main factor in its political geography. The indigenous population is slightly less than 100,000, mainly Arab rural dwellers, on the citrus groves of absentee landlords, and in the urban areas where the production of textiles and handicrafts is important. Slightly over 200,000 additional inhabitants are refugees from Israel for a total population of about 315,000.[3]

### The Jordan "Enclave" and Jerusalem Salient

In the east, the proturberance of Jordanian territory west of the Dead Sea and the Jordan Valley constitutes a frontier of tensions for both states. At its narrowest point, Israel is only 10 miles wide from the western extremity of the Jordan border to the Mediterranean, and the principal commercial cities of Tel Aviv and Jaffa are only about 12 miles from Jordan. Frequently the line bisects agricultural lands occupied by Arab refugees living temporarily in the new border area.

Jerusalem, the third largest city, has become the actual capital of Israel since July, 1953, when the transfer of government offices from Tel Aviv was completed. Besides being the seat of the government, it is also the spiritual and cultural center of the country. The historical prestige of Jerusalem is derivative, and would explain the realization of the Zionist dream of re-establishing the capital in the holy city despite the impact of location. Curiously, the capital is located in the new part of the city, which has no

[1] "Geography and Natural Resources," *This is Israel*. Israel Office of Information, New York, 1955.

[2] A demilitarized zone is an area in Israeli territory provided for by the armistice agreements. The only limitations placed on activities in such areas relate to stationing of military troops and respect of rights of Arab private property.

[3] *Gaza—Aggression or Peace*. Israel Office of Information, New York, 1957.

real tradition, as the Jewish Quarter in the old city is held by Jordan. The road to Mt. Scopus in the demilitarized zone with the Hadassah Hospital and Hebrew University is also controlled by Jordan. The Israel-held new city is located on the tip of a salient almost as an exclave, surrounded, however, on three sides by Jordan territory and deprived of trade routes and even a local trade area and important industries other than crafts. The core-area of Israel is actually within the coastal strip between Haifa and Tel Aviv, the center of economic activity.

During the war of partition in 1948-1949, Jerusalem with its corridor 5 to 20 miles wide, was cut off from the rest of the country by Arab forces, thus illustrating the vulnerability of the highway and railroad connection to Tel Aviv, the only means of contact. At the present time, Jordan bars Israel's shortest route between Tel Aviv and Jerusalem by holding the small Latrun salient at the base of the Jerusalem projection. The multitude of problems involved in this complex frontier situation has been the concern of the United Nations Conciliation Commission, involved in working out terms for the permanent settlement of such problems of political geography as territorial adjustments involving boundary delimitation and demarcation, sovereignty of the demilitarized zones, maintenance of communication links, and facilitating the economic development of the area. A plan for the internationalization of Jerusalem by the United Nations has been rejected by both states, which have taken on the task of maintaining the holy places themselves during the interim.

### DEVELOPMENT OF WATER RESOURCES

The provisional boundary in the northeast returns to the Jordan River about 20 miles south of Lake Tiberias (Galilee). Following the course of the river northward, the boundary line includes the entire shorelines of the lake within Israel, altho on the northeastern shore near the point where the Jordan empties into Tiberias, the line is only about 30 feet from the water line. This is particularly significant because of the location here of the best fishing grounds in the lake within easy range of Syrian shore batteries.

Between Lake Tiberias and the juncture of the boundaries of Syria, Lebanon, and Israel in the foothills near Dan is the vital Huleh Valley containing the headwaters of the Jordan and separating the densely populated and fertile valley of the Esdraelon to the

southwest from the more arid and less populated areas in Jordan and Syria. Israel, Syria and Lebanon are all claimants of these headwaters, but because of the inclusion of most of these to the north of Lake Huleh within Israel, the latter has derived greater benefit from these waters for development.

Despite the established demilitarized zones, these are frontiers of contact between Syrian and Israeli patrols which have at times made difficult the continuing development of land reclamation programs. Israel's plans for water development and reclamation follow rather closely ideas set forth in the 1940's by Dr. W. C. Lowdermilk, former assistant chief of the U. S. Soil Conservation Service, who envisaged a Jordan Valley Authority to provide irrigation waters to the Negev via canal and combined with a Mediterranean-Dead Sea hydro-electric project. Given further impetus by the mission of U.S. special ambassador, Eric Johnston, an attempt to get both sides to accept a common irrigation and hydro-electric project, Israel's efforts to carry out preliminary work on these long-range plans have met with considerable success in helping to relieve the present heavy dependence on food imports for an ever-increasing population. Within the last two years, 2,500 acres of reclaimed Huleh marshlands have been put under cultivation, part of a plan which will eventually reclaim 15,000 acres and also make available 7-10 million tons of peat for fertilizers and 70,000 tons of papyrus.[4] A proposed unilateral action by Israel for the diversion of irrigation waters thru separate canals would involve uneconomic traversing of demilitarized territory in the face of Arab opposition to a necessary unified development of water resources in the northeast. Tho a general agreement exists on the technical details of the proposed "UN-TVA" regional study, which disregarded political boundaries, conflicting political issues have impeded further work.

In summary, the difficulty of solving the multitude of frontier and boundary complexes of Israel has been reflected constantly in the past 10 years in political and administrative, refugee, and economic problems. The state of armed truce prevailing in the area and the apparent impossibility of direct political mediation by Israel and its Arab neighbors, heightened by conflicting claims of nationalism, has precluded permanent settlement of these complex problems, at least for the present.

[4] *Israel Digest*, May 20, 1957.

# GEOGRAPHICAL PUBLICATIONS

Charles C. Colby. **Pilot Study of Southern Illinois.** Southern Illinois University Press, Carbondale, Illinois, 1956. 94 pages, 48 illustrations, tables. Price $7.50.

The student of geography knows that "underdeveloped lands" is a relative term; and he knows that all such lands are not outside the boundaries of our own country. There are important geographical segments of America where the human resource is relatively underemployed and the physical resources base lies partly used. One of those segments is the southern borderland of the Middle West, where stream dissection chews at the oldest glacial drifts, where the descendants of pioneer settlers from Virginia and the Carolinas crowd upon leached, heavy soils, and cities and industries have grown less rapidly than those just to the north. A part of this borderland lies in Southern Illinois, roughly south of the latitude of St. Louis. That region is the subject of this monograph, which Professor Colby prepared during a two-year special appointment at Southern Illinois University, 1951-53.

Professor Colby first identifies the regional distinctiveness of Southern Illinois and states the aims of his study. Then he examines the population, the agriculture, commerce, mining and manufacturing, and the heritage of ideas and social institutions which characterize his region. For each major topic he discusses the situation within Southern Illinois and compares the region with the nation as a whole. He employs a profusion of maps and tables. He interprets what he sees in Southern Illinois by means of analysis of the region's location within national and Midwestern patterns of growth and change. And from the same kind of analysis he tries to foresee the ways in which Southern Illinois can be changed and developed. From his study the author draws conclusions and makes recommendations to the people of the region. He recommends lines of research—social and physical—to be given special emphasis, proposes new organizations to work for the development of the region and proposes changes in existing organizations, and he urges a role of leadership and service upon the people of Southern Illinois University, itself.

Professor Colby's study has several features which recommend it highly as background reading for the teacher and supplementary reading for the student of the geography of the United States. It is readable. The language is clear, and so is the intent of the author. The book challenges old ideas and suggests new ones to the people of the region. It is a regional study that attacks a problem. The reader learns the geography of Southern Illinois while he pursues the answers to basic questions about the hopes of the people who live there. It is a regional study that has conclusions followed by recommendations—a "happy ending" to the uninitiated readers who might wonder about the purpose and application of geographic scholarship. It touches aspects of the geography of a region which are often neglected—the role of local capital, local production of entrepreneurs, immobility of labor force, formal and informal education, tradition and community pride as factors which make and change the map.

JOHN R. BORCHERT

*University of Minnesota*

Gilbert F. White, editor. **The Future of Arid Lands.** Washington, D.C.; American Association for the Advancement of Science, 1956. 464 pages, 49 illustrations. Price $5.75.

This volume contains the papers of 34 scientists from 17 different countries and as many different fields of study. The papers were first presented at an international

symposium held in the spring of 1955 at the University of New Mexico. The idea for the symposium originated among some members of the American Association for the Advancement of Science who live and work in the dry regions of the United States; joint sponsors of the meeting were the Rockefeller and National Science Foundation and UNESCO. Editor of the volume was Dr. Gilbert F. White, Chairman of the Department of Geography, University of Chicago.

The editor has grouped the papers under five general headings. The three introductory esays—valuable reading for anyone in the field of geography—sketch out the story of man's efforts to use the arid lands, the role of scientific research in arid land development, and the problems that challenge scientists of the future. Other sections summarize recent thinking and research on the variability of rainfall, runoff, and evapo-transpiration in the arid lands; on the techniques and practices that can increase the efficiency of water-use; on the prospects for additional water from de-salting of saline ground water and sea water and from rain-making; on the outlook for breeding new strains of plants and animals better adapted to arid conditions.

The symposium is valuable in a broad sense because it brings together fresh summaries of the work of a remarkable array of scientists who have spent long and productive professional lives in the study of water-land-life relationships. The book underscores the fact that arid lands are far more complex than stereotypes of shrub and nomad. Much remains to be learned; but a very large amount of physical knowledge of the arid realm is accumulating—not only in Anglo-America but also in Latin-America, Africa, the Near East, and Australia.

The volume gives almost no consideration to arid land development in its broader geographic context. Most contributors either imply or express the assumption that increasing use of the arid lands is the essential answer to the world's "population explosion" or food shortages. Much of the discussion centers on the development of water resources. Yet there is almost no reference to the fact that the Arid lands exist in a world in which most water resources are in the Humid lands. Among the thirty-four contributors, only the venerable Dr. Shantz and the economist, Louis Koenig, take note of propositions becoming increasingly obvious in our dry Southwest—that agriculture is an economically marginal user of water, that cities and industries are the most efficient users of the arid realm, that intensive agriculture can best solve the world's food problems by shifting to the better-watered lands. Thus much of the scientific research summarized in this book may eventually have its greatest applicability in the Humid Lands. For those are the regions with the great water resource to develop. Those are the regions where intensive land-, crop-, and water-management probably can provide the greatest benefit to society.

JOHN R. BORCHERT

*University of Minnesota*

Walter Isard. **Location and Space-Economy.** The Technology Press of Massachusetts Institute of Technology and John Wiley and Sons, New York, 1956. xiv and 350 pages with graphs, diagrams, and author and subject indices. $8.75.

A synthesizing of various general theories of location and economy long has been wanting. The author states that the objective of this work is to improve the spatial and regional frameworks of the social sciences thru the development of a more adequate theory of location and space economy.

Isard has sought to reformulate economic theories and has done so with a greater concern for multiple ingredients than have his predecessors. Yet, geographers may complain that his examples lack reality, and that he has set to one side the social, political, and regional planning decisions of man. The author is aware that his conceptualizing is of little direct utility for handling specific space-economy problems, but he

views it as a necessary and valuable step before he writes a second volume which will analyze regional cases.

Among economic theorists, Losch, Palander, Predohl, and Weber receive major discussion and evaluation. Chapter topics include general theories of location and space economy; transportation inputs and related spatial concepts; the locational equilibrium of the firm with respect to transport, labor, and other orientation; market and supply area analysis; agglomeration analysis and agricultural location theory; basic interrelations of location and trade theory; and mathematical formulation of general location theory.

Geographers will be interested particularly in Chapter 11 for its very graphic presentation of locational theories, and should be stimulated to apply the forms to specific regional problems.

JACK C. RANSOME

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L. Dudley Stamp. **Asia: A Regional and Economic Geography.** E. P. Dutton & Co., Inc., New York, and Methuen and Co., Ltd., London, 1957. xvii and 726 pages, with maps and diagrams, selected references, and index. $10.75.

This is the ninth edition of Stamp's well-known textbook on Asia. The fundamental organization and thoro, if dry, treatment remain much the same as in previous editions, beginning with the first publication in 1929. But now for the first time since the third edition of 1936, the text has been revised and the type entirely reset. Maps, statistics and descriptions of political units have been brought up to date as of the mid-1950's for the most part, and the book is thus a much more useful adjunct to courses on the continent of Asia than the 1952 edition.

Seven chapters have been added in Part II, which deals with the countries and regions, to give new and separate treatment to Cyprus, Afghanistan, Pakistan, the Indian republic, Taiwan, Hong Kong and Korea. Altho the wordage was increased perhaps as much as 10 per cent, the size of the book has been increased only slightly, the main body of the text being only 694 pages as compared with 688 pages in previous editions. This saving was achieved thru the use of smaller type; not thru the loss of the author's many ingenious graphs and maps.

Probably it would be impossible to write on the political geography of Asia today and have the information completely up-to-date at the time of publication. For example, Stamp's discussion of India and Pakistan suffers by having been prepared just prior to the recent (November 1956) internal political reorganization of the Indian republic. Little or no attention is given to post-1950 political and economic changes in Communist China. Asiatic Russia, that is to say, the U.S.S.R. east and south of the Urals, is accorded relatively little space and the book should not be used by students concerned primarily with this portion of Asia.

It is doubtful if anyone could describe the rock formations, climates, soils, economies, races, languages, religions of Asia with validity equal to that of Stamp, whose knowledge is based on 25 years of travel and research. A critical examination of the chapters on India and Pakistan, however, shows how much is left to be desired in bringing up to date the interpretations of the basic facts of physical geography. The discussion of climate takes no account of the findings of modern meterology and climatology. Soils are classified, as Stamp himself confesses, in the "traditional," now outmoded, fashion. Perhaps it is not too much to expect that the interpretation of physical geography in such an authoritative textbook should be brought into accord with the findings of current research in related fields of science.

JOHN E. BRUSH

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O. D. Von Engeln and Bruce Carlton Netschert. **General Geography for Colleges.** Harper and Brothers, New York, 1957. xiii and 681 pages with illustrations, maps, tables, suggested readings, and index. $7.50.

This book is intended as a basic text presenting essentials of world geography to beginning college students. It is developed on the philosophy that a solid grasp of physical facts is a prerequisite to "geographic literacy." The authors have tried to emphasize the physical environment rather than human customs and modes of life.

The text is divided into three unequal sections. The first 62 pages treat "Landmarks of the World"—oceanic, continental, and cities. In this section the emphasis is on definition, location, and distribution of specific landscape features. Among the oceanic landmarks are those associated with seas, straits and isthmuses, islands, and coastlines. Continental landmarks include plains, plateaus, mountains, large lakes, and streams. The chapter on cities discusses the origin of cities, types of cities, commercial cities, make-up of city populations, and the anatomy of cities. Place names associated with each type of landmark are emphasized.

Except for this first section of the book, the organization is traditional. The second part of the book with 40 pages, entitled, "Location and Representation of Position" includes the usual mathematical presentation of latitude and longitude; initial map procedures, projections, and topographic maps; and the elements of weather and climate.

The bulk of the text, 555 pages, is devoted to detailed discussion of ten types of climate. The characteristics and distributions of each climatic type are presented. This is followed by considerable detailed information. Each of the major areas of the world in which the given type of climate is found is discussed. This includes fragmentary discussions of each partial or whole political unit within the larger regional framework. Bold face type places emphasis on the names of places and of products, while the questions at the close of each chapter suggest thought activities. The maps and pictures, on the whole, are well chosen and will prove helpful to students in gaining the desired abilities. The objective to develop an understanding of world geography is a difficult one to attain. With proper guidance this text can serve toward reaching this goal.

EDNA E. EISEN

*Kent State University*

Norman J. G. Pounds, and Edward L. Cooper. **World Geography: Economic, Political, Regional.** Fifth Edition. South-Western Publishing Company, Cincinnati, Ohio. 1957. VIII and 632 pages. Maps, illustrations.

Sixty chapters make up the six parts of this text. The first twenty deal with climate, soils, vegetation and the world's foodstuffs, raw materials and industries. The remaining forty chapters cover the United States, the rest of the new world, Europe and the rest of the old world. Each chapter has text questions, problems, projects and topics for discussion. There are many illustrations and maps, a few graphs and diagrams.

The text presents an endless amount of factual material but does not guide the student in its use for geographical thinking. Reference is made to so many places that most high school students would be baffled. Maps are not adequate, some being too small and others lacking place names which a beginner needs. There are no good physical maps giving accurate information concerning land forms.

This text would be difficult for many high school students. Its use would require considerable teacher-help and guidance.

VILLA B. SMITH

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# GEOGRAPHICAL PUBLICATIONS RECEIVED

Melvin E. Kazeek. **North Dakota.** North Dakota Institute for Regional Studies, North Dakota Agricultural College, Fargo, North Dakota. 1956. xvi and 264 pages with tables, maps, illustrations, bibliography, and index. $4.75.

This book interprets North Dakota's geography in its relation to resources, to economic potentialities, to climate and soil, to crops and minerals. It also shows the State's geography in its association with the people who are closely connected with it.

O. D. Von Engeln and Bruce C. Netschert. **General Geography for Colleges.** Harper & Brothers, 49 East 33d Street, New York 16, New York. 1957. xiii and 681 pages with maps, illustrations, suggested reading list, and index. $7.50.

A basic text presenting the essentials of world geography to beginning college students. The first third of the book covers the physical fundamentals, and the remainder of the book consists of a regional geography of the world, treated systematically by climatic regions.

Thomas A. Blair and Robert C. Fite. **Weather Elements.** Prentice-Hall, Inc., 70 Fifth Avenue, New York 11, New York. 1957. xiv and 414 pages with illustrations, maps, tables, and index. $6.75.

A revised edition incorporating the new developments in meteorology also furnishing the basic weather knowledge.

**The First One Hundred and Fifty Years.** A History of John Wiley and Sons, Inc., John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, New York. 1957. xxv and 242 pages with illustrations, and index. $7.50.

Recounts its history in publishing. A story of progress in industry and many areas of pure, applied, and social sciences.

Ruth Danenhower Wilson. **Here is Haiti.** Philosophical Library, Inc., 15 East 40th Street, New York 16, New York. 1957. 204 pages with illustrations, and bibliography. $3.50.

The author is a sociologist and experienced writer. She visited parts of Haiti, and has written this book on the African and French Culture in Haiti.

Nicholas L. Fr.-Chirovsky. **The Economic Factors in the Growth of Russia.** Philosophical Library, Inc., 15 East 40th Street, New York 16, New York. 1957. xv and 178 pages with bibliography, and index of names. $3.75.

The book approaches the problem from the historico-economic point of view, beginning with the eleventh century. The latter part of the book stresses the great significance of the economic doctrine of Communism, as a major tool in preserving the Russian political interests.

Paul F. Griffin and Robert N. Young. **California, The New Empire State.** Fearon Publishers, 2450 Fillmore Street, San Francisco 15, California. 1957. xiii and 325 pages with illustrations, maps, bibliography, and index. $5.50.

Deals with the landforms, geographic setting, and the sinews and muscles of California's economy. Photographs illustrate natural features in each region, as well as urban and agricultural land uses. Maps depict the physical setting of each region; dot maps show crop distribution.

Paul F. Griffin and Robert N. Young. **Atlas of California.** Fearon Publishers, 2450 Fillmore Street, San Francisco 15, California. 1957. 53 pages. $1.50.

Intended to meet the needs of educators and laymen alike. There are regional maps, also crop distribution maps.

Malcolm J. Proudfoot. **European Refugees.** Northwestern University Press, Evanston, Illinois. 1957. 542 pages with tables, maps, bibliography, and index. $6.50.

A study in forced population movement.

Rector Lawrence Lee. **Gil's Discovery in the Mine.** Little, Brown & Company, 34 Beacon Street, Boston 6, Massachusetts. A story of 202 pages. $3.00.

Thru this story the author hopes to show the importance in the mastery of mathematics, engineering, and mechanics on the part of almost everybody.

Frank K. Kelly. **Reporters Around the World.** Little, Brown & Company, 34 Beacon Street, Boston 6, Massachusetts. 1957. 239 pages of adventure through 17 stories. $3.00.

This book deals with the adventurers in personal lives of many famous men and women.

Huey Louis Kostanick. **Turkish Resettlement of Bulgarian Turks 1950-1953.** University of California Press, Berkeley 4, California. 1957. 163 pages with tables, maps, illustrations, notes, and selected bibliography. $2.50.

A study of the movement of the Turks from Bulgaria.

M. A. Azema. **The Conquest of Fitzroy.** Essential Books Inc., 16-00 Pollitt Drive, Fair Lawn, New Jersey. 1957. 237 pages with illustrations, maps, and glossary. $5.00.

Deals with the triumph of The French Expedition to Mount Fitzroy, in the Patagonian Andes, in 1952. The success in the most modern techniques of "artificial climbing" is described.

Anton F. Bruun, Sv. Greve, Hakon Mielche, and Ragnar Aparck, edited. **The Galathea Deep Sea Expedition 1950-1952.** The Macmillan Company, 60 Fifth Avenue, New York 11, New York. 1957. 296 pages with illustrations, map, and index. $8.00.

The valuable work and results of the Danish expedition *Galathea* during 1950-52 is recorded in this book by the scientists themselves.

Frederick Elwyn Kidder, compiled. **Survey of Investigations in Progress in the Field of Latin American Studies.** School of Inter-American Studies, University of Florida, Gainesville, Florida. 1956. 58 pages with author index, and subject index.

Bibliography of material on Latin America compiled by the School of Inter-American Studies, University of Florida.

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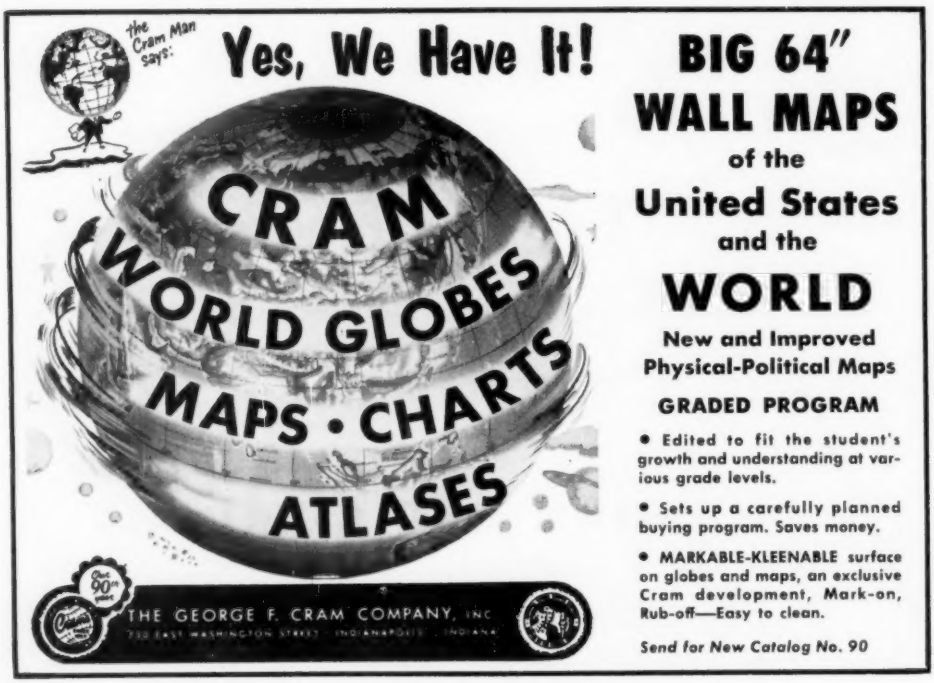
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